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March 29, 1958

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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Summer Scientist

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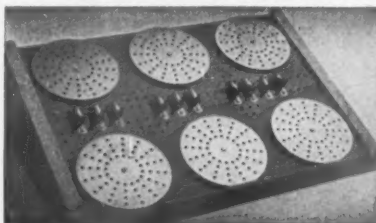
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SOCIOLOGY

Urban Planning Needed

The United States' growing population, with its concomitant health problems that are both physical and psychological, means that planning is needed.

➤ **OVERPOPULATION** is one of the serious problems menacing civilization today.

Sufficient attention has not been given to conserving human and other resources by means of population limitation. Many fear that this would be tampering with "natural laws" or the laws of God, Reginald R. Isaacs of Harvard University, a regional and city planner, told the 1958 National Health Forum meeting in Philadelphia.

Yet, we not only interfere with "death laws," reducing death rates, but we place into the hands of a few men the powers to destroy whole populations. Competition for space and means of support may touch this off, he pointed out.

Our major health problems arise from masses of people living too close together in competition for this needed space and means of support.

Another problem which he stressed was the unaccepted governmental centralization which has met some of these health problems. Only a fraction of our 165,000,000 population has accepted the government supervision.

Mr. Isaacs predicted that in 20 years the population will have jumped to 230,000,000 and in 50 years will have increased to a possible 330,000,000.

New practices of freedom and government will have to be devised, he stated.

"Rigid governmental, economic, and social controls beyond any that we have known will be required to place the community interest—the common good—before the so-called 'rights' of the individual. Herein may lie major health problems, psychosomatic, psychiatric, and psychological as they may be, resulting from the reversal of almost unlimited freedom of action to strong community controls commensurate with the needs of a tremendous and densely settled population," he concluded.

Orvin W. Campbell, manager of Miami-Dade County, Fla., also urged that governmental steps be taken to plan for the population increase of the future. Our basic need and hope, he said, is a governmental agency capable of blending and controlling these health problems.

Urban Obsolescence

➤ **URBAN OBSOLESCENCE**, the abandonment of old metropolitan areas by families who prefer the sprawling suburbs, is causing a painful transition within the cities which demands more brains, character, drive, organization and leadership, a metro-

politan project planner told the Forum.

From now on, Luther Gulick, president of the New York City Institute of Public Administration, said, most Americans will be born, grow up, live, work and die in great metropolitan complexes; some in the cities, some in the expanding suburbs, but mostly in urban surroundings.

The new metropolitanism is affecting most of our social institutions such as church life, clubs, societies, voluntary hospitals and charities, cultural and recreational establishments, political parties and government operations, he said.

Slums outrun renewal projects, schools become overcrowded, crime breaks out, water pollution increases and industrial waste fumes hover overhead in increasing amounts.

Metropolitan development has forced us into the necessity for a new type of thinking, he stressed. Government structures are needed which can handle this expansion, can marshal the resources of technical competence, of leadership and of money, and plan for future development while building for the present.

"We are short of clear thinking, political, social and business leadership, and appropriate governmental institutions, plans and decisions," he said.

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GEOPHYSICS

Strange Tracks Puzzle Students of Ocean Floor

➤ **"CHICKEN TRACKS"** where no chickens could possibly have walked and scratched are currently puzzling scientists at Columbia University's Lamont Geological Observatory, New York.

The "tracks" were photographed more than a mile below the surface of the Arctic Ocean in the first pictures ever made of the ocean bottom in the central polar region. So far scientists have not been able to determine what they are, how they got down 7,500 feet or how long they have been there, although marine life is known to be present.

The markings, if made by sea snails, would have a burrow at one end and a snail at the other, Dr. Kenneth Hunkins, a geophysicist at the Observatory, said.

Other pictures show large rocks on the ocean floor with no rock formation visible. They could have floated out on the ocean on ice floes and later fallen to the bottom when the ice melted.

A 35-millimeter camera with its own light source is used to take the photographs. Enclosed in a metal container, it is lowered through a hole in an ice floe. When the camera hits the ocean floor, the impact triggers both light and shutter and a picture is taken. One picture every 30 to 40 seconds will be taken if the camera is not lifted.

The special camera, designed by Lamont geologist, Dr. Edward M. Thorndike, can also be used to determine the speed of ocean currents. Since it stirs up a cloud of muddy water when it strikes the bottom, current speed can be determined by noting how many pictures are taken before the water clears.

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"CHICKEN TRACKS"—Short tracks of unknown origin were photographed on the ocean floor, 7,500 feet down. The cloudiness at the top of the photograph was caused by the camera when it hit the bottom. The photographs were taken in the vicinity of 83° N, 165° W in the Arctic Ocean.

SCIENTIA INTERNATIONAL

NOVAS DEL MENSE IN INTERLINGUA

➤ **Recercas de Cancere.**—In experimentos animal, un gruppo de investigadores al Universitate Illinois ha constatate que varie formas de stress augmenta le probabilitate de recurrentias metastatic de cancro. Le typos de stress investigate includeva illo producite per chirurgia anticancerose. Tamen, ben que operationes anticancerose accelerava le diffusion del morbo, le animales con cancro postoperatori habeva plus longe periodos de superviventia que le animales non operate.

➤ **Meteorologia.**—Le Laboratorio de Recerca Naval a Washington reporta que observationes de Sputnik I permette le conclusion que a un altitude de circa 400 km le atmosfera es 40 vices plus dense que lo que esseva previemente supponite. Illo contine circa un dece-millesimo de un miliardesimo de un gramma de materia per centimetro cubic. Nulle "vacuo" create in le laboratorios al superficie del terra ha unquam attingite un tal grado de rarefaction.

➤ **Energia Atomic.**—Le detonation experimental de un bomba atomic in Nevada a un profundor subterranean de plus que tres quartos de un kilometro ha resultate (1) in nulle contamination radioactive del atmosfera al superficie del terra e (2) in enorme massas de rocca fractionate e permeabilisate. On crede que iste constatation permette le prediction que detonationes atomic va provar se utile (e economicamente utilisabile) in le exploitation de minas e depositos petrolifere e mesmo in le trenchation de canales in terreno collinose.

➤ **Antibioticos.**—Le retention de antibioticos per le corpore pote esser prolongate e lor desirabilissime concentration in le nodos lymphatic pote esser augmentate per administrar los in le forma de sales de grande dimension molecular. Iste descoberta esseva facite per un gruppo de scientistas chec a Praga. Illes propone le nomine "antibiolymphina" pro le compositos in question.

➤ **Chirurgia.**—Dr. Seiichi Makuuchi de Tokio ha perfectionate un operation in que un cancerose vesica urinari es reimplaciate per un segmento del intestino. Le operation ha essite usate in cinque patientes con solamente un morte attribuibile a illo. Duo del remanente quatro patientes se restablia sin incidente. Le altere duo moriva ab cancro metastatic in altere organos.

➤ **Agronomia.**—Dannos de frigidio in fructos de citro es invisibile al exterior sed pote esser detegite mechanicamente gratias al facto que le vulnerate pulpa offere un augmentate resistentia a radios Roentgen. Un machina que utiliza iste principio ha essite construite al Universitate California. Le costo del machina rende su adoption per le industria citricole multo dubitose.

➤ **Cardiologia.**—Un nove technica pro le diagnose de defectos in le septos del corde ha essite disveloppate per Dr. R. Sanders del stato-unites Instituto National de Cardiologia a Bethesda in Maryland. Le patiente inhala krypton-85 que es un isotopo radioactive e un gas inerte. Si le septos del corde es intacte, krypton-85 pote apparer in le corde dextere solamente post un longe viage ab le pulmon via le corde sinistre e le circulation major a transverso le corpore. In le curso de iste viage le gas perde un grande parte de su radioactivitate. In le presentia de un defecto septal, un parte del krypton-85 passa directemente ab le corde sinistre a in le corde dextere. Post iste curte viage illo ha perdit quasi nihil de su radioactivitate. Specimens de sanguine ab le corde dextere de patientes subiecte al inhalation de krypton-85 es obtenite per catheterisation. Le grado de radio-

activitate in illos es determinate per medio de un specie de contator Geiger, e le valores obtenite demonstra alora le presentia o le absentia de un defecto in le septos intracardiac.

➤ **Cardiologia.**—"Quando le corde se arresta, le homine mori." In nostre dies, iste ancian truismo es frequentemente dismentite, proque il es hodie un occurrentia satis commun que un chirurgo succede a salvar le vita de un patiente, ben que le pulso cardiac in ille se ha arrestate, simplemente per massagiar su corde de maniera a fortiar lo per modulate pressioness manual a continuar su action pumpante. Proque le exacte e multo specific rhythmo que es requirite in iste typo de massage es difficile a mantener durante longe periodos de tempore, Dr. A. Vineberg de Montreal ha disveloppate (e patentate) un mechanic massagiator cardiac. Illo consiste in principio de duo impermeabile saccos que se trova le un intra le altere. Inter le duo saccos, un pression que varia secundo le rhythmo normal de un corde human es mantenite per medio de un pompa pneumatic. Le sacco exterior es coperte de un material plus o minus rigide. Le sacco interior es destinate a esser passate super le corde que ha cessate funcionar independentemente.

➤ **Endocrinologia.**—Crescentia excessive in altor in juvene pueras pote esser relente o arrestate per le administration de estrogeno, le hormon sexual feminin. In reportar iste observation, Dr. Ch. S. Freed de San Francisco rememora un previe experimento sue in que in 1948 ille accelerava le crescentia de juvene pueras per le suppression de estrogeno intra le organismo.

➤ **Inventiones.**—Le principio del copri-lecto electric es utilisate in un electric tapis disveloppate per un firma commercial de Halifax in Anglaterra. Il pare que un camera in que occupa pro cento del solo es coperte per le tapis electric pote esser mantenite a un temperatura agradabile al costo de paucio plus que un cent per hora, excepte quando le frigidio al extero es vermente sever.

➤ **Ingenieria.**—Le precipitator electrostatic servi a reducir le pollution industrial del atmosfera gratias al facto que su presentia in un camino resulta in le retention de multe particulas de fumo. Illo consiste in principio de un filo metallic a carga electric que es suspendite equidistantemente inter terrate placas conductori. Secundo le theoria solamente le placas collige le objectionabile particulas, sed in le practica etiam le filo se copri de un dense deposito que reduce e mesmo supprime su efficacia. Iste difficultate ha essite eliminata per ingenieros switze e anglese qui ha trovate que filo barbate remane active in despecto de omne depositos, proque le punctas del barbas remane semper nitide.

➤ **Piscicultura.**—Le salmones que habita le laco Pend Oreille in Idaho deveni progressive-mente plus curte. Deposit 1951—secundo multo meticulose mesurationes—le pisce ha perdit plus que 3 cm de su previe longor. Il es possibile que il se tracta hic de un phenomeno malthusian de hyperpopulation, sed ni iste ni ulle altere explication es vermente adequate. Le pisce decrecente es un mysterio.

➤ **Psychologia.**—Tests conducite al Penitentiario Joliet in Illinois ha monstrate que psychopathes ha memorias significativamente melior que normales e neuroticos.

➤ **Hematologia.**—Tests inter studentes de medicina a Los Angeles ha monstrate que lor nivellos de cholesterol sanguinee esseva significativamente elevate sub conditiones de stress.

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GENERAL SCIENCE

Reading Interlingua

➤ **YOU CAN READ Interlingua** if you had no more than one semester of high school French or Spanish or Latin and flunked it. You can read and understand a great deal of it even if you had never had contact with any foreign language.

Send this page to an acquaintance abroad and tell him that he can get additional information about Interlingua from Alexander Gode, Science Service's Interlingua Division, 80 E. 11th St., New York 3, N. Y.

Financial contributions to the Interlingua program are needed and will bring dividends in the future by helping to establish this new international tool.

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GEOPHYSICS

Second U.S. Moon Up

The United States has launched its second earth satellite, this one a small test satellite, powered by the Navy's Vanguard rocket, that is circling higher than any other "moon."

► THE SECOND earth satellite to be launched successfully by the United States entered into orbit at approximately 7:26 a.m., March 17.

The test satellite went nearly 1,000 miles farther into space than had been expected. Since all three rocket engines performed better than expected, Dr. John P. Hagen, director of the project, said, this gave the satellite an extra burst of velocity. Its speed approached 19,000 miles an hour.

The "baby moon," which together with the third stage rocket weighed more than 50 pounds, is expected to be a very long-lived satellite. Estimates of how long it will con-

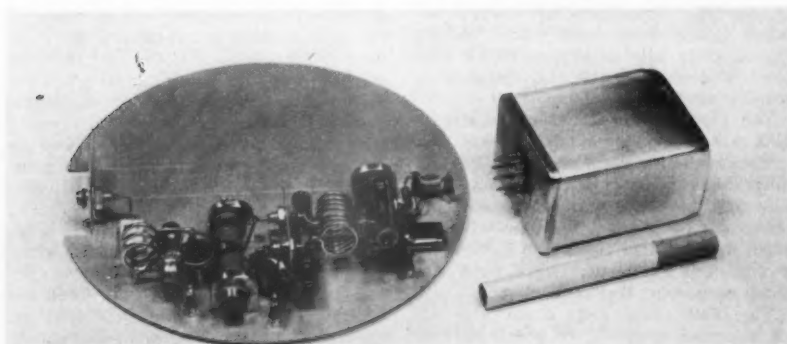
tinue to circle the earth range from five to ten years. Latest information concerning its orbiting time and maximum height above the earth are: speed, 18,000 to 19,000 miles an hour; maximum height, 2,466 miles; minimum height, 404 miles; time for making a complete circle of earth, 134 minutes.

Containing two miniature radio transmitters, one operating on 108.00 megacycles, the other on 108.03 megacycles, the aluminum sphere satellite is also expected to transmit radio signals for a "long time". One of the transmitters operates on solar batteries and it operates only during daylight.

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How the Satellites Compare

	Vanguard	Explorer I	Sputnik I	Sputnik II
Weight (in pounds)	3.25	30.8	184	1,120
Shape	sphere	tube	sphere	cone
Size	6.4" diameter	80" long	22.8" diameter	15' long
Launcher Thrust (in pounds)	40,000	83,000	250,000 to 395,000	
Maximum Altitude (in miles)	2,466	1,575	560	1,025
Minimum Altitude (in miles)	404	227	140	140
Orbit Time (in minutes)	134	114.95	96	103.7
Launching Date	March 17, 1958	Jan. 31, 1958	Oct. 4, 1957	Nov. 3, 1957



SATELLITE TRANSMITTER—A small, powerful radio transmitter that may be used in future U. S. satellites has been designed weighing less than three ounces but capable of developing 500 milliwatt broadcast power. The version at the left shows how the transmitter would fit into a satellite or missile. Optional packaging at the right would put the three-transistor transmitter in a compact unit that could fit into a pocket. Developed by DuKane Corporation, St. Charles, Ill., the transmitter uses one-fourth to one-fifth the battery power needed for a tube-type circuit.

RADIO

Saturday, April 5, 1958, 1:30-1:45 p.m., EST

"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio network. Check your local CBS station.

Mr. Armig G. Kandorian, director, Radio Communication Laboratory, Federal Telecommunications Laboratories, Nutley, N. J., will discuss "World Wide Communications."

ROENTGENOLOGY

Simpler Method for Reading X-Ray Effects

► A SIMPLE and direct method by which the instantaneous effects of X-rays can be measured has been found.

The method may eventually lead to a general chemical protection against X-ray harm, Drs. R. Brinkman and H. B. Lamberts of the Physiological Institute, University of Groningen, The Netherlands, report in *Nature* (March 15).

Their method consists of studying the X-ray influence on the substances between the cells of the body. This was accomplished by measuring the amount of viscosity, or stickiness and thickness, of synovia (a fluid in the joints, tendon sheaths and bursae) after exposure to X-ray treatment.

Salt solution was injected into several types of tissue after which varying amounts of irradiation were directed upon the tissue. The injection needle registered the changes in pressure, or viscosity, of the synovia as several strengths of X-ray were applied.

Moderate irradiation dosage, 500 roentgens, reduced the viscosity of the synovia by 20%, the doctors report. Decreased dosage resulted in a higher degree of viscosity.

Therefore, since the viscosity varies with the amount of X-ray dosage, a change in the viscosity is a reflection of the administered X-ray dose. Coupled with the salt solution injection, this method of reading the viscosity reveals the amount of resistance to irradiation treatment by cell-surrounding substances.

The scientists point out that with a fine needle inserted well into the connective tissue of the skin, these "phenomena are easily reproducible and well-suited for the investigation of local chemoprotection. The results may be valuable for a more general chemoprotection."

This simple method of reading resistance may open new doors to determine the exact effect of some of the chemicals now used for X-ray protection. Many of the dozen or so chemicals now being used have never been accurately tested to determine how successfully they do protect.

By administering a chemical thought to protect, then applying the method described above, the viscosity change can be read instantaneously as X-ray treatment is applied. As the viscosity decreases, the amount of protection does also.

Perhaps scientists will soon have a competent check for chemico-protection through the use of this method.

Science News Letter, March 29, 1958

MEMOGENDA

MEMOGENDA
New Way To Get Things Done

Avoid confusion of scraps of paper . . . lost opportunities . . . forgotten duties and appointments. Use the MEMOGENDA. Permits constant survey of work ahead . . . results in working without strain. Checks out completed tasks and builds valuable history of activity. Users say they gain more time for living by making the best use of their working hours.

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PUBLIC HEALTH

Condemn Royal Jelly

The Federal Trade Commission and Food and Drug Administration are investigating the "unfounded claims" made by the manufacturers and distributors of royal jelly.

► THE U. S. Government is inquiring whether the advertising and sale of royal jelly, the queen bee food, is a "racket."

The Federal Trade Commission, charged with detecting and stopping fraudulent and misleading advertising, is actively conducting "a number of investigations" into what are termed "unfounded claims" of the royal jelly trade.

The Food and Drug Administration is also looking into the use of royal jelly in cosmetics, foods and drugs.

Government and private scientists say many quotations from scientific reports appearing in some royal jelly advertising have been used out of context, and that if the public could see the entire report it would often be obvious the scientists intended no support of the claims.

Fraudulent Ads

An official of the FTC has admitted the Commission is considering legal action as a result of "a multitude of inquiries or complaints, mostly complaints, from the public." So far, he said, the investigation reveals that advertisements claiming therapeutic, cosmetic or food value of royal jelly for humans are "fraudulent and a hoax."

The Food and Drug Administration already has seized, following court actions, several large quantities of drug preparations containing royal jelly. Most of the shipments have been confiscated after court default or no contest by the producers. However, two contested cases, in the Detroit and New York City areas, are expected to set a precedent for future actions.

Under existing law, the FDA can act only against drug preparations for which therapeutic claims have been made. Action against royal jelly as a cosmetic or food requires proof that the bee product is actually harmful to humans.

The FDA's official stand on royal jelly used to answer public inquiries is:

"Our medical advisers have reviewed carefully the available information on royal jelly and have not seen any convincing evidence that it has any value whatever when used by man either as a food, or as a drug, or as a cosmetic. Hence, we recommend no product that contains it."

The Post Office Department also has taken action against some royal jelly advertising, and is cooperating with the regulatory agencies in their current investigations.

Royal jelly, the supposedly mysterious substance that makes the difference between worker bees and queen bees, probably is a very good food. Good for bees, but not for humans.

That sums up the attitude of competent scientists, including physicians and beekeep-

ing authorities, who have studied royal jelly. They hasten to add that so far they have found nothing harmful to humans in royal jelly, but neither have they found anything beneficial.

James I. Hambleton, in charge of the U. S. Department of Agriculture's beekeeping section, Beltsville, Md., said the most significant fact commonly overlooked by the public is that the queen bee exists entirely on royal jelly. The milky-white nectar is the queen's food. Humans should not expect to gain food value from the tiny doses, 50 to 100 milligrams, many of them have been taking daily.

"Most of the claims made for royal jelly are unwarranted and not backed by clinical research," Mr. Hambleton said, adding that reputable scientists have been unable to find any trace of most of the "famous European scientists" quoted in many royal jelly advertisements.

Of the "European scientists" actually located, he said, some have been without the recognition of their professional colleagues, and others have carried reputations for conducting quick, sometimes one-day "research" programs for fees.

Many scientists feel the current royal jelly fad probably stems from misinterpretations and unwarranted assumptions drawn from early basic research into how a royal jelly diet can change an ordinary bee larva into a queen.

Queen Bee Food

In trying to find out why one egg hatches a worker bee and why another hatches a queen bee, scientists learned that when a queen dies the remaining bees select one of the better-looking newly-hatched grubs as their future queen. For the first two and one-half days after hatching, all grubs are fed royal jelly, a secretion of pharyngeal glands of workers. However, the young bees destined to be workers or drones are soon switched to a diet of pollen and nectar. The future queen is continued on royal jelly.

Even the queen fed on royal jelly is far from perfect. She has no maternal instinct. She will reproduce, but will not care for her young. She is larger than other bees, but not capable of performing their work because of only partly-developed pollen-gathering equipment on her legs.

Just because a queen fed only royal jelly outlives other bees and can reproduce whereas others cannot, there is no reason to believe that humans, fed very tiny amounts of royal jelly in their diets, will live longer or be more energetic, scientists point out. With respect to dietary needs, humans and bees cannot be compared.

Science News Letter, March 29, 1958

MEDICINE

Smoking Linked to Ills

► THE SECOND part of the full report on a 44-month follow-up of a study to correlate smoking and death rate indicates not only a high relationship between smoking and lung cancer, but also several other common diseases.

The smoking-disease relationships, published in the *Journal of the American Medical Association* (March 15), show:

1. An extremely high association for a few diseases, such as cancer of the lungs, larynx, esophagus and gastric ulcers.

2. A very high association for a few diseases, such as pneumonia and influenza, and duodenal ulcer, aortic aneurysm (formation of a blood-filled sac in the main arterial trunk), and cancer of the bladder.

3. A high association for coronary artery disease, cirrhosis of the liver, and cancer of several sites or malignant tumors which have spread to other parts of the body.

The much-publicized statistical study by Drs. E. Cuyler Hammond and Daniel Horn of the American Cancer Society also indicates there was little or no association between smoking and chronic rheumatic fever, hypertensive heart disease, or other hypertensive diseases, nephritis, nephrosis, diabetes, leukemia, cancer of the rectum, colon or brain.

The relative importance of the associations

listed is dependent upon the number of deaths attributed to each disease, as well as on their degrees of association with cigarette smoking, Drs. Hammond and Horn explain.

It was found that the death rate of men with lung cancer who had given up cigarette smoking a year previous to enrollment in the study of 187,783 men was lower than the death rate for those men who continued to smoke until death. This extreme rate was found to hold true in rural as well as urban areas.

A total of 7,316 deaths occurred among men with a history of regular cigarette smoking, where only 4,651 would have occurred if the age-specific death rates of the smokers had been the same as for men who never smoke, the control group. The difference of 2,665 may be considered as "excess," the doctors point out.

Coronary disease accounted for over half of these excess deaths, lung cancer and cancer of other sites accounted for almost 14% each. Other heart and circulatory diseases, 5.8%, and pulmonary, cerebral vascular lesions, gastric and duodenal ulcers, cirrhosis of the liver and all other diseases combined made up the remaining percentages of these excess deaths.

Science News Letter, March 29, 1958

MEDICINE

Drug Treats Allergies

► A NEW HORMONE has been used successfully in the treatment of many skin and allergic diseases that were formerly difficult to control and treat with known drugs.

The drug, known as Medrol, or methylprednisolone, is a member of the corticosteroid family, a branch of the compound cortisone, which fights inflammation and arthritis. It was developed by the Upjohn Company.

At a conference on Medrol, meeting in Augusta, Mich., leading medical scientists and clinicians heard reports on treatment with the hormone.

Dr. Lawrence C. Goldberg of Cincinnati, Ohio, reported that alopecia areata, patchy loss of hair on the face and head, responded to treatment with the drug. A 67-year-old man who had no eyebrows and had not shaved more than twice a week for 15 years, grew a full beard and eyebrows and was shaving daily after two months of treatment.

Skin ailments such as psoriasis, seborrheic dermatitis, allergic skin reactions and hives, all responded satisfactorily to doses of Medrol, Dr. Goldberg reported.

He also noted that 15 of his patients had heart disease, six were diabetics, and eight had histories of peptic ulcers, in addition to skin ailments. All responded favorably to the drug. Formerly, treatment with the older corticosteroids in such cases was impossible, the doctor said.

Dr. W. K. Grater of Dallas, Texas, reported 128 successful treatments out of 138 patients with allergic disorders. In addition to the successful treatment of such disorders, he said, the hormone does not produce the undesirable side effects of some of the older corticosteroids, such as retention of salt and water by the body, or the flare-up of peptic ulcers. Such undesirable reactions have been a major criticism of the older drugs.

Dr. Frank X. Dwyer, Kansas City, Mo., reported finding that Medrol proved more effective than any of the hormones previously used to treat psoriasis. He held out hope that hormone treatment of skin problems will have fewer side effects, such as sleepiness, weakness and loss of appetite, among others, a problem which has long plagued skin specialists.

Science News Letter, March 29, 1958

MEDICINE

Restore Arthritics To Useful Lives

► RHEUMATOID arthritic patients may find new hope in a modern combination of drug treatment and physical rehabilitation which restores in some cases their independence and usefulness.

A five-year study of 38 patients severely crippled by rheumatoid arthritis demon-

strated clear-cut gains in the patients' physical capacity while under treatment. Eleven of these 38 were able to be placed in part or full-time employment or into colleges at the end of the five-year period. The study was conducted by the Institute of Physical Medicine and Rehabilitation at New York University-Bellevue Medical Center.

Rheumatoid arthritis is a chronic and progressive disease. However, the majority of the patients in the study held on to substantial proportions of their gains.

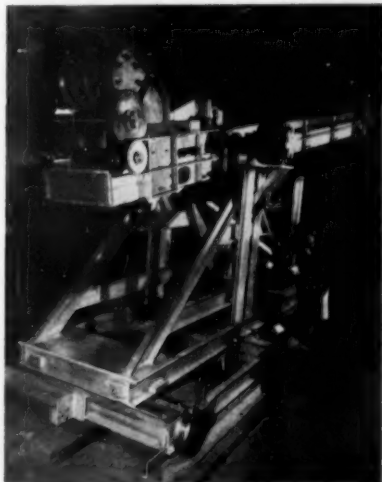
During the first two years of the study, the patients were hospitalized. Treatment consisted of medical, physical and occupational therapy, remedial exercises, training in activities of daily living, social, psychological and vocational counseling. Medical treatment included administration of hormone drugs such as corticosteroids.

Dr. Edward W. Lowman, clinical director, published his report in the current issue of *Arthritis and Rheumatism*. He rates patient motivation as the most important factor that probably influenced the patients' chance to help himself back to self-sufficiency.

Other factors included: intensity of the disease process, extent of already inflicted damage on a joint structure, and the patient's use of self-help devices.

"This study, the first of its kind," commented Dr. Russell L. Cecil, medical director of the Arthritis and Rheumatism Foundation, "substantiates the opinion of many leading rheumatologists that at least 75% of all patients suffering from arthritis can be saved by a judicious combination of medical and physical therapy."

Science News Letter, March 29, 1958



HANDLING DEVICE—This machine, built for the Westinghouse Electric Corporation by the mechanical division of General Mills, is designed to handle radioactive materials in experimental containers or "tumbles." These containers are inserted by remote control through the bottom of the reactor vessel into the core for testing.

CHEMISTRY

Create Giant Cells With Heavy Water

► **HEAVY WATER** inhibits the normal division of living cells and allows them to grow to giant size.

The effect was observed first in plant cells. Subsequently it was found that deuterium, the heavy hydrogen that makes heavy water heavy, interferes with the reproductive capacity of mice and slightly inhibits ascites tumors in certain mice strains.

Dr. Melvin Calvin, University of California chemist, told scientists at the meeting of the American Chemical Society, New York Section, the effects are probably caused by changes in the size, shape and bonding of giant molecules of the living organism, brought about by the substitution of heavy hydrogen atoms for ordinary hydrogen atoms.

The effect was first noticed when Drs. O. Holm-Hansen and Vivian Moses grew chlorella in heavy water. In ordinary water heavy hydrogen is about one part in 5,000. When the percentage of heavy hydrogen was 33%, the cells grew to about ten times normal size, but failed to divide. After about six months, cells could be adapted so that they would divide even though the water contained 60% deuterium. Above that, adaptation was decreasingly efficient, and the capacity to divide ceased at about 95% deuterium.

Dr. Ann Hughes found all male mice fed on water containing 30% deuterium lost their ability to reproduce. In females the effect was less—up to 40% in some strains before conception was blocked. The effect was reversible when the mice were put back on ordinary water.

The results in mice suggest interference with cell division, since embryonic tissue is rapidly dividing.

The work suggests basic new studies of the structure and synthesis of the genetic material, nucleic acid, which is important in all growth and cell division.

Science News Letter, March 29, 1958

ENGINEERING

Pilot Safety Capsule Undergoing Tests

► A **SAFETY** cocoon designed to bring a pilot back to earth from extreme altitudes is now being tested.

The new device consists of a closed capsule and a system of parachutes. C. W. Russell, assistant project engineer at the Republic Aviation Corporation, Farmingdale, N.Y., told the American Society of Mechanical Engineers and the American Rocket Society meeting in New York.

At present, Mr. Russell said, several capsules that will get a pilot, who has abandoned his plane flying faster than the speed of sound and miles above the earth, home without exposing him to perilous hazards are under consideration. These include those capsules that consist of the entire pressurized cockpit, the whole front end of an air-

plane, a minimum-size seat capsule and a compromise version that houses pilot, seat and some control instruments.

One specific capsule now being tested works this way:

The pilot who wishes to bail out presses an ejection handle. A complicated series of devices then locks his shoulder harness into place and closes a sliding door to seal the pilot's capsule. The capsule is then blown down a set of rails and out of the bottom of the plane by two explosive charges. Machinery is set in motion to extend fins from the capsule to steady it during its fall, and finally, a series of parachutes are released so the capsule floats to earth.

Mr. Russell cautioned that many problems still face designers who want to "get a planeless pilot safely and painlessly back to earth."

"Again it must be emphasized," he said, "that there is no margin for error in the mechanisms utilized in this or any escape device. It may be called on to operate only once, but the report on how well it worked should be given by the pilot who has had to use it."

Science News Letter, March 29, 1958

CHEMISTRY

"Damage" Metals To Improve Them

► **MANY PROPERTIES** of metals can be improved by "damaging" them with nuclear reactor radiation, two former Atomic Energy Commission scientists told the Nuclear Engineering and Sciences Conference meeting in Chicago.

Seven non-fissionable metals, including stainless steel, nickel, titanium, copper and iron, were treated under various conditions with irradiation from three types of nuclear reactors by Dr. C. A. Bruch and W. E. McHugh at the Knolls Atomic Power Laboratory, Schenectady, N. Y.

The strength, hardness and electrical resistance of all the metals increased, the scientists reported. In each case there was a decrease in ductility, or the ease with which the metal could be drawn into a thin wire.

On the basis of their studies, the scientists have developed a picture of the radiation damage process, as changes caused by irradiation are called, which they hope will be applicable to other metals and to other conditions of radiation.

If their theory of radiation damage proves to be correct, it may be possible to speed up future studies of radiation damage.

The changes in properties or radiation damage in non-fissionable metals are due primarily to the scattering of neutrons by the metal atoms. "The two kinds which are important are the elastic and the inelastic scattering and these have different effects."

The view of the radiation damage process presented attempts to relate the data gathered during the experiments with existing theories, although the scientists cautioned that there may not yet be enough data for definite conclusions.

Science News Letter, March 29, 1958

IN SCIENCE

ENDOCRINOLOGY

Height of Tall Girls Controlled by Hormones

► **EXTREME TALLNESS** in girls that results from excessive growth during puberty and adolescence may be curbed to a more normal development.

Dr. S. Charles Freed of the endocrinology clinic at Mount Zion Hospital in San Francisco reports in the *Journal of the American Medical Association* (March 15) the successful suppression of growth in two girls.

Excessive growth was stunted harmlessly by administering estrogen, a female hormone, to two young girls with extremely rapid bone growth.

One was, at the age of 12, five feet, four and one-half inches tall. The other was 11 and one-half, with a height of five feet, six and one-half inches.

Both indicated rapid average growth rate per year, Dr. Freed reports.

Within several months after the beginning of estrogen therapy, both girls' growth slowed considerably. No harmful effects resulted from the treatment.

Presumably, the growth suppression by estrogen is due to the action on the pituitary, a growth-determining gland, and action on the growth centers of the bones themselves, he explained.

A previous experiment which Dr. Freed and a colleague, Dr. M. B. Goldberg, also an endocrinologist at Mount Zion, recorded in 1948, showed stunted growth could be stimulated into increased growth by suppressing estrogen.

Science News Letter, March 29, 1958

METEOROLOGY

Weather Vision Speeds Air Force Forecasts

► **THE LATEST** development in streamlining weather forecasting, weathervision, is now in use by the U. S. Air Force at Andrews Air Force Base, Washington, D. C.

It uses television to speed the dissemination of weather information to pilots and planners at this jet-age base, where fighter pilots stand ready to defend the nation's capital.

Weathervision allows one forecaster to service a number of customers at separate locations simultaneously. One forecaster, from his seat at the weathervision console, can provide complete scheduled briefing periods, answer requests for pilot briefings and pilot-to-forecaster service, keep the automatic telephone answering device up-to-the-minute, and monitor the weather radar scope.

The system has been found successful at four other Air Force bases where it is now in use.

Science News Letter, March 29, 1958

ICE FIELDS

NAVIGATION

New Arctic Shipping Lanes Will Be Opened

► NEW SHIPPING routes in the Arctic Ocean will be opened up in the next few years, an English scientist has forecast, addressing the first international conference aimed at improving methods of predicting sea ice formation.

Dr. C. W. M. Swinbank, research fellow at the Scott Polar Research Institute, Cambridge, England, reported results of his search through the logs of all ships traversing the Canadian Arctic region since 1900. From this information and studies of aerial photographs, he compiled an ice atlas of the North American Arctic.

Such an atlas can save "many millions" of dollars to United States shipping alone when new shipping routes are opened, Dr. Swinbank told the Arctic Sea Ice Conference meeting at Easton, Md.

More than 80 scientists from nine countries, including four scientists from the U.S.S.R., attended the conference.

Dr. Swinbank said the charts he had made, and also those of Dr. T. E. Armstrong of the Admiralty Hydrographic Department, London, were not designed to replace short-term ice forecasts made by the U. S. Navy Hydrographic Office. They are intended as a supplemental aid to mariners.

Eventual aim of scientists studying sea ice formation problems is to be able to make long-range forecasts. Before this is possible, however, the relationship between the earth's net heat gain in the equatorial regions and net heat loss in the polar regions, due to the sun's radiation, must be much more completely known than it is now.

Science News Letter, March 29, 1958

MEDICINE

Heart Patients Eat Radioactive Fat

► RESEARCH on heart patients who eat "meals" of radioactive fat indicates people with coronary artery disease have a metabolic error in their body chemistry.

This was reported by Dr. William Likoff and associates at the Albert Einstein Medical Center, Philadelphia, to the American Heart Association meeting in Chicago.

The new radioactive fat technique showed that the fat turnover in the body takes considerably longer in patients with known coronary artery disease than in normal subjects.

Four groups were given the radioactive fat meals. They included a normal, or control, group; patients with a high cholesterol blood level, some with and some without any evidence of coronary artery disease; and patients with normal blood cholesterol levels but with coronary artery disease.

With normal subjects, the blood was most radioactive within six hours after the meal, indicating the peak absorption of fat by the blood at that time.

Measurements of the radioactivity showed that 16% of the total amount of the fat eaten was in the blood. Twenty-four hours later less than five percent remained in the blood.

In contrast to this were the results in the three other groups. Peak radioactivity occurred later and indicated greater absorption of the fat. Much more was retained in the blood after 24 hours.

In these types of patients there seemed to be a similar "biochemical abnormality" after eating the radioactive fat meal.

As yet, however, no clearcut relationship has been established between the fats people eat and the clogging of arteries. Many factors probably play a part in causing this condition, Dr. Likoff said.

Co-authors of the report with Dr. Likoff were Drs. Donald Berkowitz, Asher Woldow and Gerson Jacobs.

Science News Letter, March 29, 1958

BIOCHEMISTRY

Fungi Spores May Have Chemical-Stopping Walls

► FUNGI SPORES may have a tough armor-plate-like wall that is capable of stopping chemical killers.

This is implied in a report on the effectiveness of fungicides, or fungi-killing chemical compounds, studied with radioactivity and described to the Nuclear Engineering and Science Conference meeting in Chicago.

A research team from the Battelle Memorial Institute, Columbus, Ohio, tried to learn why one chemical can kill fungi while a closely-related chemical compound is seemingly ineffective.

Using radioactive tracers, the scientists were able to draw this picture of what happens:

The less fungicidal compound loses its effectiveness by being stopped at the spore wall before it can carry on its lethal work beyond the wall. The more fungicidal compound, on the other hand, apparently is able to pierce the wall and to reach the cytoplasm where it exerts its deadly power.

However, the scientists explain that the radioactive tracer study of fungicidal action was too limited to be definitive.

They point out that "the factors which govern the fungicidal potency of chemical compounds are difficult to correlate with either their functionality or their physical properties."

The study was made to try to determine if some physical factor might not be involved in stopping a chemical from going about its deadly job in fungi spores.

"Preferential cell-wall adsorption, relating to unknown physical factors," they conclude, "may operate to limit the effectiveness of certain compounds which might otherwise be fungicidal."

The study was made by R. W. Greenlee, H. T. Kemp, R. S. Davidson and M. M. Baldwin of Battelle.

Science News Letter, March 29, 1958

CHEMISTRY

Flame Replaces Complex Process for Nuclear Fuel

► A TECHNIQUE that produces nuclear fuel rods better and faster than existing processes was revealed at the 1958 Nuclear Congress in Chicago.

The "novel" preparation method uses a high temperature flame furnace instead of the complex wet chemical, and sometimes physical, processes presently used to convert uranium compounds to usable uranium dioxide rods.

The main objective of converting uranyl nitrate or uranium trioxide to uranium dioxide is to achieve greater density. Scientists want to pack the greatest possible weight of fuel into the smallest possible volume.

Eventually, the method may be used to prepare solid rods of nuclear fuel directly from the starting materials without first going through a powder stage, C. D. Harrington and A. E. Ruehle, Mallinckrodt Chemical Works, St. Louis, reported.

The process involves feeding the starting material, uranium trioxide or uranyl nitrate, onto the top of some uranium dioxide fused in the hottest part of a hydrogen-methane flame or atomic hydrogen arc. The new material breaks down in the flame to form uranium oxide, which is stable at the very high temperature.

As feed material is added, a rod of crystalline uranium dioxide forms. The rod is continuously lowered by a drive mechanism such that the top end is always in the hottest part of the flame or arc.

The process was developed at the Atomic Energy Commission plant in St. Louis.

Science News Letter, March 29, 1958

EDUCATION

Only 16 U.S. High Schools Now Teaching Russian

► ONLY 16 high schools in the United States are now teaching the Russian language, according to Dr. Helen B. Yakobson, head of George Washington University's Slavic languages department.

Eight public and eight private high schools make up the 16, although several schools in South Dakota, Connecticut, California, Indiana, West Virginia, New Jersey, Wisconsin, and the District of Columbia are currently considering adding Russian courses to their curricula. Two New York City schools planned Russian courses to begin in March.

The report also shows that all except seven states have at least one college or university offering Russian.

By way of contrast, 5,000,000 to 6,000,000 Soviet students are reported to be studying English, and some 70 French secondary schools teach Russian three to four hours a day for five years.

Some of Dr. Yakobson's findings, together with those of Dr. Marjorie Johnston of the U.S. Office of Education, appear in the Office's publication, *School Life* (March).

Science News Letter, March 29, 1958

EDUCATION

Laboratories Train Scientists

Through contact with scientists during summer work in laboratories, hundreds of young people crystallize their specialties toward careers in science and technology.

See Front Cover

By SHIRLEY MOORE

► HUNDREDS of America's newest teen-aged scientists are being incubated each year in summer jobs in the laboratories of foresighted industries, universities and Government agencies.

The growing number of such summer programs for students has revolutionized traditional ideas of youthful vacations. As one youngster put it, "Instead of spending our summers, we're investing them!"

Embryo scientists have been turning up in such impressive assignments as "classified" secret work for Boeing Aircraft at Cape Canaveral, Fla., Dow Corning Corporation, Midland, Mich., and Melpar, Falls Church, Va., and working on electronic equipment for Redstone Arsenal, Huntsville, Ala. It is especially interesting to note that none of these boys had yet entered college and two of them had just completed their junior year in high school.

The photograph on the cover of this week's SCIENCE NEWS LETTER shows young Betty Coder at work in the laboratories of the Institute of Home Economics of the U. S. Department of Agriculture's Agricultural Research Service.

In addition to these examples of what today's high school students can do, other surprising trends and facts on student-scientist jobs have been discovered in a study recently completed by SCIENCE SERVICE's

Science Clubs of America. A detailed survey was made of the high school students and college freshmen and sophomores who have been finalists in the National Science Fair or winners in the Science Talent Search for the Westinghouse Science Scholarships and Awards, both activities of SCIENCE SERVICE.

Results of the survey show that every summer more employers are offering mutually valuable employment to these young science students. After some years of beating against age and formal training restrictions that barred them from such vacation employment, the teen-agers are proving outstanding science students make outstandingly competent employees able to make valuable contributions in their fields.

Many new scientific jobs are now being opened to students. Projects assigned to them are of increasing importance and responsibility, and salaries are rising in proportion to their proven ability. Restrictions are gradually becoming flexible enough to allow even a ninth grader of unusual talent to look forward to a summer of work on a significant research project.

As a matter of fact, about 70% of the scientific jobs reported by the students surveyed were held by youngsters who had not yet entered college and whose ages ranged from 14 to 18, either at the time of the survey or when they originally held the jobs.

Profitable Projects

In some instances, a student was paid to continue work he or she had started as a science fair or Science Talent Search project. For example, Stephen H. Caine of Shreveport, La., now a senior in high school, designed and built a corrosion control demonstrator during his junior year. His idea was to devise a supplement to the regulation textbook and lecture instruction given to employees of the oil and gas industries to inform them on the corrosion that occurs in supply pipes and methods of protection against such corrosion. His project won first place in his local and state science fairs and a fourth award at the National Science Fair in Los Angeles last May.

The Texas Eastern Transmission Corporation, which has 6,000 miles of buried steel gas transmission pipe lines to protect from corrosion, invited Stephen to build his demonstrator for them last summer.

He was given an assistant at the company's shops to help in the construction, and duplicates of the demonstrator were adopted as standard equipment in the company's training program for engineers and technicians in their various offices and districts.

Joel Frederic Lubar, formerly of Silver Spring, Md., is another example of a student who was given an opportunity to continue work in his own field. In 1955 Joel won first place in the local and regional science fairs and went to the National Science Fair at Cleveland, Ohio, with his telescope exhibit. That summer, after the completion of his junior year in high school, he worked at the Cumberland Optical Company in Silver Spring, Md., grinding, polishing, correcting and figuring optical surfaces.

Continuing Awards

The following year, he won a fourth award in the National Science Fair at Oklahoma City and an honorable mention in the Science Talent Search with the help of his Cassegrainian Newtonian telescope and photographs taken through it.

That summer he was employed at the Warner and Swasey Observatory at Case Institute of Technology, East Cleveland, Ohio, to plot stellar positions, take astronomical photographs, and participate in observing and in spectral analysis. He returned to the same position again last summer.

Then there is Suzan Lynn Hopkins, who investigated an antibiotic in the digestive system of earthworms as her winning project in the National Science Fair, and spent the summer of her junior year as a bacteriologist at the Infectious Disease Laboratories of the University of Iowa, continuing her investigations. This past summer she was employed by Eli Lilly and Company in Indianapolis, Ind., as a biochemist working on purification procedures for new antibiotics. She is now a pre-medical student at the University of Iowa.

Several youngsters who want to be doctors or medical technologists report jobs as lab-



ENTOMOLOGIST—Leland N. Edmunds Jr., 18, was a student trainee in the Insect Physiology Laboratory of the U. S. Department of Agriculture at Beltsville, Md.



METALLURGIST—James S. Foster, 20, was a summer employee in the physical metallurgy section of the International Nickel Company, Inc., at its Huntington, W. Va., laboratory.

oratory technicians in hospitals and testing centers. A future zoologist spent his senior summer doing specialized work on black-birds for the U. S. Fish and Wildlife Service.

Such summer job opportunities range all the way from the exceptional case, when a company invites a local student to work with them because of his or her unusual accomplishment that is applicable to their work, to full scale permanent programs such as those which have been in operation for some years at the National Bureau of Standards, Washington, D. C., and at the Westinghouse Research Laboratories, Pittsburgh, Pa.

Last summer, for instance, there were 240 student scientists and engineers at the National Bureau of Standards, representing more than 50 colleges and several high schools. Of the college students, 100 had worked at the Bureau during previous summers. Fourteen high school graduates, all winners in the Science Talent Search or the National Science Fair, were working there for the first time.

Return Trips Made

Advancement in grade and salary is offered to returning students, and the Bureau's program of lectures and demonstrations by eminent scientists is open to them.

The Westinghouse Electric Corporation employs new student scientists each summer, in addition to the returnees who come back year after year. They are assigned to important projects at Westinghouse installations, including the Bettis Atomic Power Division near Pittsburgh, a national center for atomic reactor research and development.

The University of California Radiation Laboratory invites ten outstanding science students to accept summer fellowships each year to work under the distinguished faculty of the Laboratory, including Drs. Glenn Seaborg and Edward Teller.

Many companies, such as Aerojet-General Corporation and Hughes Aircraft in California, have organized their own versions of summer programs to encourage and develop promising young science manpower.

To describe even a fair sampling of all of these programs and the capable young people they are employing would require a full-length book, rather than a brief report. However, even brevity and a purely arbitrary choice of examples does not obscure the heartening picture of leading industries, universities and agencies working out creative ways of solving the serious shortage of scientists both for themselves and for the entire nation.

List of Potential Employees

Organizations wishing to receive the list of 1958 Science Talent Search winners and honorable mentions, available now, and the catalogue of National Science Fair finalists, to be issued in May, for use in planning summer employment programs, may do so by enclosing a stamped, self-addressed envelope for each with their request to Science Clubs of America, 1719 N Street, N.W., Washington 6, D. C.

Science News Letter, March 29, 1958



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AFRICAN SCULPTURE—Ladislav Segy—*Dover*, 163 pl., illus. with photographs by the author, paper, \$2. Some 50 years ago it was discovered that ancient African art includes what are believed to be modern art trends.

THE ARCHAEOLOGY OF CENTRAL AND SOUTH-EAST HONDURAS—Doris Stone—*Peabody Museum*, 134 p., 84 pl., paper, \$5.85. Honduras is particularly interesting archaeologically as a meeting ground of various pre-Columbian peoples and because living descendants of some of these aboriginal inhabitants are to be found there today.

ARCHITECTS' YEAR BOOK 8—Trevor Dannatt, Ed.—*Philosophical Lib.*, 223 p., illus., \$10. Articles cover the development of thought in architecture. Illustrations show examples of ancient as well as modern structures.

BASIC CONCEPTS IN CHEMISTRY—George W. Watt—*McGraw-Hill*, 538 p., illus., \$6.50. An elementary college text with the content delimited judiciously so as not to teach too much too early.

BIOLOGICAL ULTRASTRUCTURE—Arne Engström and J. B. Finean—*Academic*, 326 p., illus., \$8. An introduction to the field for students in a variety of areas.

COMMUNICATION, ORGANIZATION, AND SCIENCE—Jerome Rothstein, foreword by C. A. Muses—*Falcons Wing*, 110 p., illus., \$3.50. The author indicates that communication and measurement, the two elements on which science is built, have the same underlying structure.

THE COMMUNITY OF THE FUTURE: And the Future of Community—Arthur E. Morgan—*Community Service*, 166 p., \$3. The author, engineer and administrator, expresses the hope that the community of the future will save what is vital in village life while capturing the desirable qualities of urban life.

DIRECTORY OF INDEPENDENT COMMERCIAL LABORATORIES PERFORMING RESEARCH AND DEVELOPMENT 1957—Govt. Printing Office, National Science Foundation, 59 p., paper, 40¢.

A total of 175 commercial laboratories reported expenditures of \$24,000,000. But, although the scientific personnel ranged from one to over 400, over 50% employ fewer than four persons.

DRUG RESISTANCE IN MICRO-ORGANISMS, CIBA FOUNDATION SYMPOSIUM: Mechanisms of Development—G. E. W. Wolstenholme and Cecilia M. O'Connor, Eds.—*Little*, 352 p., illus., \$9. Providing a "glimmering of an indication" that microbial drug resistance may ultimately be brought under control.

THE FIRST BOOK OF THE EARTH—O. Irene Severy—*Watts*, F., 63 p., illus. with drawings by Mildred Waltrip, \$1.95. Depicting the earth as a picture book telling the story of its construction, history and inhabitants. For children.

GERMAN-ENGLISH GLOSSARY OF NEUROPHYSIOLOGY—Roger Merritt Morrell, Ed.—*Consultants Bureau*, 181 p., paper, \$7.50. Intended to aid in the elimination of language barriers.

GROWTH OF CRYSTALS: Reports at the First Conference on Crystal Growth, 5-10 March 1956—In English Translation—A. V. Shubnikov and N. N. Sheftel, Eds.—*Academy of Sciences USSR (Consultants Bureau)*, 294 p., illus., paper, \$15. Containing 43 of the papers presented at this conference attended by more than 400 representatives of various branches of Soviet science and industry.

THE GUINEA PIG IN RESEARCH: Biology, Nutrition, Physiology—Mary Elizabeth Reid—*Human Factors Research Bureau*, 87 p., illus., paper, \$2. Describing the known dietary needs of this common laboratory animal and some aspects of its physiology which may increase its usefulness in medical research.

LATE NAZCA BURIALS AT CHAVINA, PERU—S. K. Lothrop and Joy Mahler—*Peabody Museum*, 61 p., 21 pl., paper, \$4.50. Among the finds were examples of the earliest known casting on the south coast of Peru. A radiocarbon date shows that the burials were made about 1320 years ago.

MAN-MADE SATELLITES—Willy Ley—*Guild Press (Simon and Schuster)*, rev. ed., 44 p., illus. with drawings by John Polgreen, \$1. A simple description of the artificial satellite and what puts and keeps it in space.

MATHEMATICAL FOUNDATIONS OF INFORMATION THEORY—A. I. Khinchin, translated by R. A. Silverman and M. D. Friedman—*Dover*, 120 p., paper, \$1.35. Student edition of a contemporary Russian text.

THE MEASUREMENT OF COLOUR—W. D. Wright

—*Macmillan*, 263 p., illus., \$10.75. Showing how colors can be matched or reproduced in objective ways.

METHYL GLUCOSIDE: Preparation, Physical Constants, Derivatives—G. N. Bollenback—*Academic*, 183 p., illus., \$5.50. Data accumulating over a period of years in the literature are here assembled as a source of reference for those interested in these potentially important polyols.

NUCLEAR REACTOR PLANT DATA: Volume One, Power Reactors—J. L. Everett, Committee Chairman—*Am. Soc. of Mechanical Eng.*, 64 p., illus., paper, \$3. Information about the types of reactor plants and their experimental prototypes that are designed to produce electric power.

ORGANIC ELECTRODE PROCESSES—Milton J. Allen—*Reinhold*, 174 p., illus., \$6.50. For the organic chemist but also for the novice.

THE RADIO AMATEUR'S HANDBOOK—Headquarters Staff, ARRL—*American Radio Relay League*, 35th ed., 584 p., illus., paper, \$3.50. Standard manual and source of up-to-date information for radio "hams."

RADIOISOTOPES: A New Tool for Industry—Sidney Jefferson, foreword by Henry Seligman—*Philosophical Lib.*, 110 p., illus., \$4.75. To give businessmen insight into the varied ways in which industry can benefit from the use of radioisotopes.

ROCKET EXPERIMENT SAFETY: Safety Suggestions for the Rocket Hobbyist—DeWitt O. Myatt, David M. Paul and others—*Atlantic Research Corp.*, 36 p., illus., paper, single copies free upon request direct to publisher, 901 N. Columbus St., Alexandria, Va. Telling the youthful or amateur scientist how to avoid painful or fatal accidents from which nothing is learned but which may frighten others away from this fascinating field.

SCIENCE AND HUMAN VALUES—J. Bronowski—*Messner*, 94 p., illus., \$3. A British scientist discusses engagingly and concisely the creative mind, the habit of truth and the sense of human dignity.

SPACE PILOTS—Willy Ley—*Guild Press (Simon and Schuster)*, 44 p., illus. with drawings by John Polgreen, \$1. Telling simply what may be expected to happen when man first ventures into space.

SPACE RESEARCH AND EXPLORATION—D. R. Bates, Ed.—*Sloane (Morrow)*, 287 p., illus., \$4. A pre-Sputnik book emphasizing general scientific principles rather than technical details.

THREE DIMENSIONAL DYNAMICS: A Vectorial Treatment—C. E. Easthope—*Academic*, 277 p., \$7.80. An introduction to the subject for second and third year honor students.

TURBOJET FUNDAMENTALS—Howard E. Morgan—*McGraw-Hill*, 2d ed., 104 p., illus., \$4. An introduction to theory and operating principles. Originally prepared by Douglas Aircraft for training their own personnel.

Science News Letter, March 29, 1958

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CHEMISTRY

New Process for Freeing Uranium Frees Security

► URANIUM is now being stockpiled in the United States on such a large scale that all processes for extraction and preparation of the vital raw material have been declassified, thanks to two recent developments.

Until now, uranium production has been "critically slow" and processes for extracting the metal from its ores have been classified as secret, Dr. Victor K. La Mer, professor of chemistry at Columbia University, New York, told a meeting of the New York section of the American Chemical Society.

The recent developments that have improved this country's uranium position, as cited by Dr. La Mer, are discovery of rich ore sources on the Colorado Plateau, and development of extremely efficient flocculating agents that improve extraction processes and, effectively, up-grade poor quality ores.

Drs. La Mer and Nina Syniawsak, Columbia University, and Dr. Robert H. Smellie Jr., professor of chemistry at Trinity College, Hartford, Conn., paved the way for development of the new flocculating agents which improve separation of tiny ore particles from the water liquor in which the ore was pulverized.

Most uranium extraction processes involve grinding the ore in water until a "slime" is formed. This effectively separates valuable metal-bearing parts of the ore from rock and other useless material.

Although the methods produce the desired separation, the particles formed are too small to be recovered by usual processes of filtration, Dr. La Mer said.

Flocculating agents, long used by chemists to cause small particles to group together, or coagulate into larger particles, provided the answer to the problem.

Although the particles produced by grinding are too large to be considered as dissolved in solution, the colloidal particles, as they are known, are too small to be trapped by sieves for recovery.

Flocculating agents based on fundamental research by Dr. La Mer and his associates are added to the slimes to coagulate the colloids into particles large enough for efficient recovery.

Science News Letter, March 29, 1958

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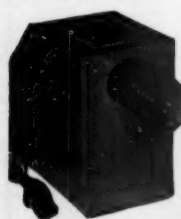
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Questions

BIOCHEMISTRY—How does deuterium affect normal cell division? p. 200.

CHEMISTRY—What developments have improved the United States' supply of uranium? p. 203.

EDUCATION—How many Russian students are reported to be studying English? p. 201.

GEOPHYSICS—What is the maximum altitude of the Vanguard satellite? p. 197.

MEDICINE—What is the scientific name for the disease in which calcium stones form in the kidney? p. 206.

ROENTGENOLOGY—What effect do X-rays have on the viscosity of synovia? p. 197.

Photographs: Cover, U. S. Department of Agriculture; p. 195, Kenneth Hunkins—Lamont Geological Observatory; p. 197, DuKane Corporation; p. 199, Westinghouse Electric Corporation; p. 202, left, U. S. Department of Agriculture, right, International Nickel Company, Inc.; p. 208, Western Aircrafts.

MEDICINE

Diet and Aspirin Stop Some Kidney Stones

➤ REDUCTION of milk and cheese in the diet and a daily dose of aspirin may restrict the formation of calcium stones in the kidney, Dr. Edwin L. Prien, assistant professor of clinical urology, Boston University School of Medicine, told a group at the American College of Surgeons' meeting in New York.

The exact nature of the mechanism by which calcium unites with other substances in the kidneys to form stones is still unknown. Some success, however, has resulted from restriction of milk and cheese plus daily doses of aspirin.

Originally, 19 patients were subjected to this treatment. Of the 19, five showed some increase in size or density of stones previously formed. One patient developed a new stone and stones continued to form at a rapid rate in another. There was no indication of new stone formation in the remainder, Dr. Prien reported, and neither was there any increase in size or density of pre-existing stones.

Dr. Prien cautioned that he did not recommend the use of salicylate drugs, the evidently helpful agent in aspirin, to patients who suffer chronic kidney disorders because there is a danger of toxicity from retention of the drug in the body. But if the drug is properly excreted, he said, it may prove beneficial in the prevention of calcium stone formation.

Urolithiasis, formation of stones in the kidneys, is a recurrent disease in many people. The recurrence rate ranges from about 15% or 20% for the common small calcium oxalate stone passed by patients with uninfected kidneys to the higher rate, 60% or 70%, for staghorn stones removed by surgery from chronically infected kidneys.

Science News Letter, March 29, 1958

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• New Machines and Gadgets •

For sources of more information on new things described, send a self-addressed stamped envelope to SCIENCE SERVICE, 1719 N St., N.W., Washington 6, D. C., and ask for Gadget Bulletin 928. To receive this Gadget Bulletin without special request each week, remit \$1.50 for one year's subscription.

✿ **MODEL SKELETON** made of plastic can be bent without breaking. The partially articulating model can be made fully articulating by drilling small holes at the joints and joining them with fine wires. Anatomically exact, the skeleton is drawn to one-sixth scale of a six-foot man.

Science News Letter, March 29, 1958

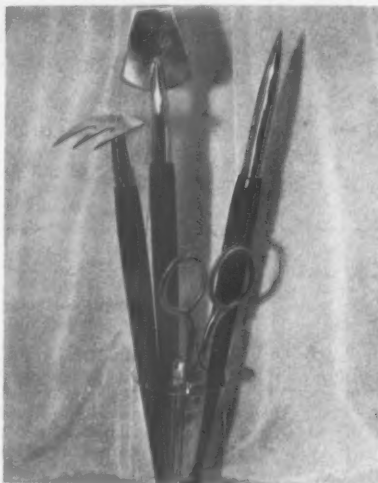
✿ **PROJECTION SCREEN** is said to make possible viewing in fully-lighted rooms. The optical light control system of the projection surface is formed on a metalized plastic. The flexible material is washable, tear-resistant, fade-proof and will not discolor.

Science News Letter, March 29, 1958

✿ **INNER-GROOVE MICROMETER** can be used to measure and check the depths of internal "O" ring, retaining ring and recess grooves to engineered specifications. Two interchangeable anvils are provided with the micrometer. Grooves can be measured in bores as small as 15/32 of an inch and to a depth of two inches from the face.

Science News Letter, March 29, 1958

✿ **MINIATURE GARDEN TOOLS** for the house-plant grower include a rake, spade, pick and shears. The tools, shown in the



photograph, are made of brass set in plastic handles. The four indoor gardening tools are held ready for use in a compact holder.

Science News Letter, March 29, 1958

✿ **ONE-COAT MAINTENANCE PAINT** can be used on porous concrete or a variety

of metals. Based on a plastic vinyl acetate latex, the paint is corrosion resistant. It dries in about two hours and can be scrubbed in 24 hours after application if necessary.

Science News Letter, March 29, 1958

✿ **FILM LINER** can be tailored to fit any size or shape container. The liner is made of a copolymer of synthetic rubber and vinyl resins. It has a tensile strength of 22 pounds per square inch and an elongation property of 200%. It can withstand hot pourings up to 300 degrees Fahrenheit.

Science News Letter, March 29, 1958

✿ **WINTER SLIDING TOY** for children combines the thrill of a toboggan with the steerability of a sled. Made of aluminum, the snow-slider has a plywood seat for junior. Front and rear body sections are coupled by a ball joint for steering ease and riding comfort.

Science News Letter, March 29, 1958

✿ **EAR-LOCKS FOR EYEGLASS FRAMES** fit on the ends of the eyeglasses to keep them from sliding down on the nose. The plastic colorless tabs are available in three sizes to fit all plastic, horn or shell-rim frames.

Science News Letter, March 29, 1958



Nature Ramblings



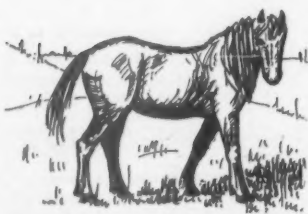
By HORACE LOFTIN

► **INDIANS** of the American West have been called the greatest natural horsemen that the world has ever known. Yet they never saw a horse until Spaniards brought them from the Old World for the conquest of the New.

In 1545, the great explorer Hernando De Soto died on the banks of the Mississippi which he had discovered. His companions built boats and sailed back to Mexico, abandoning their horses. It is generally believed that these represent the start of the great herds of wild horses, or mustangs, that came to lord over the western plains. Such as these came to furnish the calvary of the Plains Indians.

Oddly enough, bringing horses to the New World represented something of a homecoming. Remains of one of the first horses—creatures about one foot high—have been found in North America dating from

Even-Toed Mammals



some 50 million years ago! Quite unlike modern horses, this little fellow, called Eohippus, had four complete toes on his forefeet and three (with a remnant of a fourth) on the hindfeet.

Later fossil remains disclose primitive horses whose feet began to approach the modern horse's one-toed condition. Some horses of about three million years ago were one-toed, but some still kept complete side

toes. Then about one million years ago essentially modern horses were abundant throughout North and South America!

Something happened, we do not know what, but all the American horses became extinct. Our present horses descend from wild herds which roamed the great steppes of Asia. Who can say if the ancestors of the American Indians, coming to the New World by way of Siberia and the Bering Strait, did not feast on these fleet beasts of the steppes! (We say "feast," because it was probably ages later before man learned to domesticate the horse. Wild horse flesh was a welcomed addition to primitive man's larder.)

The horses, with their typical single-toed feet, are members of the great order of odd-toed mammals, the Perissodactyla. Others of this group are the tapirs and rhinoceroses, and these too are represented by fossil remains in what is now the United States.

Science News Letter, March 29, 1958

